REMARKS

The present application was filed on November 2, 2001 with 25 claims. A Restriction Requirement was mailed on October 28, 2004, and Applicants responded to the Restriction Requirement on November 10, 2004, electing claims 5-25 from Group II. Because claims 1-4 were withdrawn from prosecution by the Examiner, Applicants previously canceled these claims. In a previous response, Applicants added claims 26-31. Applicants currently amend claims 5, 6, 10, 12, 20, 26, 27, 28, and 29. Applicants also cancel claim 30. The currently pending claims are 5-29 and 31, and the independent claims are 5, 10, 20, and 29.

In the outstanding Office Action, the Examiner (1) rejected claims 5-7, 9, 10, 12, 17, 18, 20-22, 26-29 and 30 under 35 U.S.C. §103(a) as being unpatentable over Hareyama et al., U.S. Patent No. 5,752,169 in view of Westergren et al., U.S. Patent No. 5,423,076; (2) rejected claim 16 under 35 U.S.C. §103(a) as being unpatentable over Hareyama and Westergren, and in further view of Duckworth et al., U.S. Patent No. 5,619,190; (3) rejected claims 19 and 23-25 under 35 U.S.C. §103(a) as being unpatentable over Hareyama and Westergren, and in further view of Schmucker, U.S. Patent No. 3,945,008; and (4) objected to claim 31, but indicated that claim 31 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

On 8 September 2006, Applicants sent the Examiner a proposed amendment to claim 5. The proposed amendment included the amendments currently presented to claim 5. Also on 8 September 2006, the Examiner and the Applicants' attorney discussed the amendments to claim 5.

The amendments made herein to claim 5 are also similarly made to the other independent claims 10, 20, and 29. Such amendments (including amendments to dependent claims) are supported at, e.g., page 7, line 6 to page 8, line 13, and by, e.g., FIGS. 1, 2, 4, and 5. It is respectfully submitted that the amendments to the independent claims clarify Applicants' invention with respect to certain embodiments. Applicants also submit that the amendments were not made for reasons of patentability and present an argument below that uses independent, unamended claim 5 as an example to distinguish unamended claim 5 over

the cited references. Similar arguments may be made for the other independent claims. Therefore, the amendments made herein should not affect the range of equivalents, and such amended subject matter should be given the full range of equivalents.

Unamended claim 5 (i.e., claim 5 as filed in the previous response dated 11 January 2006) read as follows:

> 5. A bimodal power data link transceiver device, the device comprising:
>
> a transceiver integrated circuit (IC), the transceiver IC comprising:
>
> a transmitter, the transmitter having;
>
> a phase locked loop (PLL) frequency synthesizer comprising a partial first voltage controlled oscillator (VCO);
>
> a first power amplifier, the first power amplifier coupled to the PLL frequency synthesizer; and
>
> a receiver;
>
> a second power amplifier coupled to the first power amplifier;
>
> a transmit/receive switch coupled to the second power amplifier and the receiver;
>
> a controller coupled to the transceiver IC;
>
> a direct digital frequency synthesizer having an output coupled to an input of the transceiver IC;
>
> a second voltage controlled oscillator (VCO) coupled to the partial first VCO; and
>
> a loop filter coupled to the second VCO and the transceiver IC.

The Examiner rejected this claim using a combination of Hareyama and Westergren. The Examiner asserted that Hareyama discloses "an integrated circuit transceiver chip with the transmitter having ... a partial first voltage controlled oscillator or buffer (Fig. 3 [431])". However, Hareyama states the following:

> On the other hand, the transmitting circuit 40 processes an audio signal directly as an up channel FM signal. A PLL circuit 43 may therefore be provided and the frequency dividing signal S35 from the frequency dividing circuit 35 is provided as a reference frequency signal to the PLL circuit 43. Thus, a signal St with a carrier frequency for the up channel, which is paired with the down channel received at the receiving circuit 10, is provided from ***VCO 431*** of the PLL circuit 43.
>
> Further, the audio signal from the microphone 5 of the telephone is provided to a low-pass filter 42 via terminal T15 and amplifier 41 so that unnecessary band components are removed, and the audio signal with these unnecessary components being removed is provided to the ***VCO 431*** of the PLL 43 via a switch circuit 55 as the oscillating frequency control signal.
>
> An FM signal St, which is on the upper channel that is paired with the down channel received with the receiving circuit 10 and is FM-modulated by the audio signal from the low-pass filter 42, is thus provided from the ***VCO 431***.

Hareyama, col. 6, line 57 to col. 7, line 9 (emphasis added). Contrary to the Examiner's assertion, the element 431 in Hareyama is a VCO and not a partial VCO.

Moreover, unamended claim 5 recited "a second voltage controlled oscillator (VCO) coupled to the partial first VCO". The Examiner asserts that "Westergren teaches a transceiver with a phase locked loop (Fig. 2), a direct digital frequency synthesizer (Fig. 1 [58]), a VCO (Fig. 2 [101]) coupled to a buffer (FIG. 2 [104 & 150] *e.g.* a partial VCO), and a low pass filter (*e.g.* loop filter) coupled to the VCO" (italics in original). Westergren states the following:

> FIG. 2 shows the first conversion stage 32 of the carrier frequency conversion circuit 30. In particular, FIG. 2 shows details of a preferred embodiment of the combination of the first PLL 38 and the interacting numerical control circuit 39. Retracing the receive signal path through the first conversion stage, the first mixer 33 is coupled through the directional signal coupler 41 to the first IF bandpass filter 42. The output signal from the first IF bandpass filter 42 passes through a series combination of two first IF gain blocks or first IF signal amplifier stages 43 to recover insertion losses of the bandpass filter and provide the first intermediate signal (IF1), appropriately amplified, to the second conversion stage as defined by the input terminal 47. The modulated intermediate transmit signal (TXIF), is

> coupled through the transmit signal terminal 69 of the directional coupler 41 selectively only during transmit periods of the transceiver 10. The preferred PLL 38 includes a ***voltage controlled oscillator 101 (VCO)*** which has an oscillatory signal output at the desired injection frequency to the first signal mixer 33. The oscillatory output signal is applied from an output terminal 102 of the ***VCO 101*** through a signal splitter 103 (SS) to a ***first signal buffer amplifier 104*** in the injections signal path 106 to the injection terminal 36 of the first mixer 33, and a ***second signal buffer amplifier 105*** disposed in a signal feedback path 107 having its output coupled in turn to the numerical control circuit 39. The preferred numerical control circuit 39 includes a packaged frequency-phase comparator circuit 111 which provides an output signal to the voltage controlled oscillator 101 which is expressed as a cumulative or integrated voltage error signal resulting from the phase comparison of two frequencies. A voltage error signal may appear at an output terminal 112 of the frequency-phase comparator circuit 111 and is integrated through the feedback amplifier circuit 113 before being applied through a low pass filter 114 to a control voltage input terminal 115 of the ***VCO 101***. The numerical control circuit 39 makes use of a typical controllable divider and phase comparator circuit device 116. A local oscillator signal (FL, 10.24 MHz) applied to a local oscillator input terminal 117 of the device 116 is passed through a divide-by-sixteen modulation at 118 the output signal of which is then compared against a numerically modulated feedback signal from the VCO. The feedback signal from the ***VCO 101*** passes through the ***buffer amplifier 105***, through a divide-by-two circuit 121 and through numerically controlled dual modulus logic circuits 122 and 123. Control logic which operates the numerically controllable divider and phase comparator circuit 116 includes a data bus 126 (DATA), a clock signal line 127 (CLK), and a data strobe timing line 128 (STROBE). The data bus 126 may be a preferred serial data input signal. Other numerical circuit configurations may apply a parallel input to a data register. An error output terminal 129 (LOL) provides an error signal on loss of the lock on the loop frequency.

Westergren, col. 8, lines 4-61 (emphasis added).

With regard to a combination of Hareyama and Westergren, the Examiner asserts the following:

> In an analogous art, Westergren teaches a transceiver with a phase locked loop (Fig. 2), a direct digital frequency synthesizer (Fig. 1 [58]), a VCO (Fig. 2 [101]) coupled to a buffer (Fig. 2 [104 & 1 05] *e.g.* partial first VCO), and a low pass filter (e.g. loop filter) coupled to the VCO. (Fig. 2 [114]) At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement the transceiver IC of Hareyama after

> modifying it to include the components of the phase locked loop of Westergren. One of ordinary skill in the art would have been motivated to do this since the transceiver is more reliable by minimizing the number of loop circuits. (Fig. 2 lines 28-33)

Office Action dated 18 May, page 3. This text appears to argue that the VCO 101 and "buffer" 104/105 of Westergren would be added to (i.e., replace the elements of or be appended to the elements of) the transceiver IC of Hareyama. However, Applicants' unamended claim 5 recited "a transceiver integrated circuit (IC) having ... a partial first voltage controlled oscillator (VCO)" and "a second voltage controlled oscillator (VCO) coupled to the partial first VCO" (i.e., where the second VCO is not part of the transceiver IC). Therefore, even if the VCO 101 and "buffer" 104/105 of Westergren would be added to (i.e., replace the elements of or be appended to the elements of) the transceiver IC of Hareyama, there would be no disclosure of "a second voltage controlled oscillator (VCO) coupled to the partial first VCO", as the second VCO is not part of the transceiver IC in unamended claim 5, but the VCO 101 and "buffer" 104/105 of Westergren would be part of the transceiver IC of Hareyama and the Examiner admits that Hareyama does not disclose "a second voltage oscillator coupled to a buffer".

On the other hand, the cited text from the outstanding Office Action might be arguing that the VCO 101 and "buffer" 104/105 of Westergren would be "added" to the transceiver IC of Hareyama by adding the VCO 101 and "buffer" 104/105 of Westergren outside the transceiver IC of Hareyama and coupled to the VCO 431 of Hareyama. If this is the argument in the cited text, then there is no motivation for one skilled in the art to perform such a combination. This is true because "the audio signal from the microphone 5 of the telephone is provided to a low-pass filter 42 via terminal T15 and amplifier 41 so that unnecessary band components are removed, and the audio signal with these unnecessary components being removed is provided to the ***VCO 431*** of the PLL 43 via a switch circuit 55 as the oscillating frequency control signal." Hareyama, col. 6, line 66 to col. 7, line 5 (emphasis added). The VCO 431 of Hareyama is used to create an FM signal using audio: "the transmitting circuit 40 processes an audio signal directly as an up channel FM signal".

Hareyama, col. 6, lines 57-58. The VCO 101 and "buffer" 104/105 of Westergren, coupled to the VCO 431 of Hareyama, would have two cascaded VCOs which would no longer provide an FM signal using audio. In other words, the VCO 431 of Hareyama, used to provide an FM signal from an input signal, would now frequency modulate the output of VCO 101 and "buffer" 104/105 of Westergren. One skilled in the art would not cascade two VCOs in order to provide an FM signal using audio from a microphone.

Consequently, either the combination of Hareyama and Westergren does not teach or imply all elements of unamended claim 5 or a *prima facie* case of obviousness is not met as there is no motivation to combine Hareyama and Westergren in the suggested manner. For at least these reasons, unamended claim 5 was patentable over the cited references. Unamended claims 10, 20, and 29 (i.e., claims 10, 20, and 20 as filed in the previous response dated 11 January 2006) contain subject matter similar to the subject matter argued above with respect to independent, unamended claim 5. Therefore, these unamended claims were also patentable over the cited references, as are the claim depending therefrom. It is submitted therefore that the amendments made at least to independent claims 5, 10, 20, and 29 were not made for purposes of patentability and the amended subject matter should retain a full range of equivalents.

Based on the foregoing arguments, it should be apparent that (unamended and amended) claims 5-29 and 31 are thus allowable over the references cited by the Examiner, and the Examiner is respectfully requested to reconsider and remove the rejections.

Respectfully submitted:

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